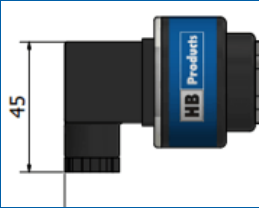
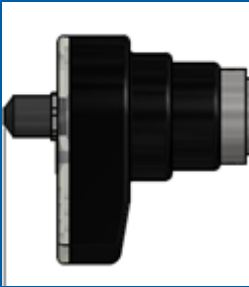
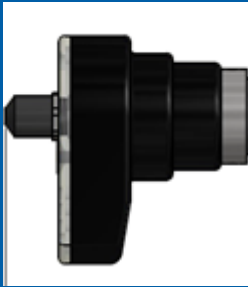


Data sheet: HBSO

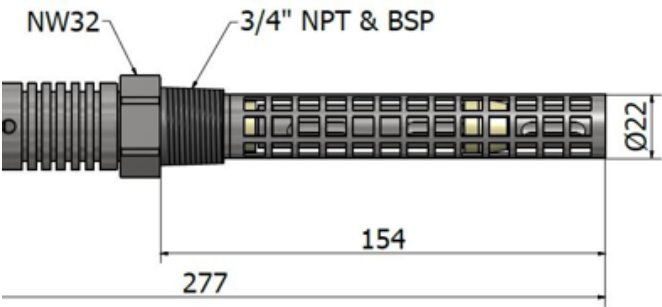
The HBSO series includes capacitive Oil Switches designed for various temperature ranges and oil types. Simple versions come preset, while advanced models can be adjusted for specific applications. All products feature a split design, with shared mechanical parts across electronic types, making them ideal for industrial refrigeration systems, heat pumps, and similar uses. Basic versions offer PNP or NPN outputs for PLC integration, while advanced models include a solid-state relay. These switches detect oil in gas or air, but for oil detection in immiscible liquids like ammonia or water, the HBOR or HBSR models are recommended.



	Oil types	24V AC/DC ±10% PNP/NPN output	24V AC/DC ±10% Solid-state relay	90-240V AC Solid-state relay
				
Low temperature Oil temp.: -30°C to 40°C Protection degree: IP65	Mineral PAO	HBSO1-LT	HBSO1-SSR-1/ALL	HBSO1-SSR-2-LT
	PAG POE	HBSO2-LT	HBSO2-SSR-1/ALL	HBSO2-SSR-2-LT
Standard Oil temp.: 0°C to 80°C Protection degree: IP54	Mineral PAO POE	HBSO1	On request	HBSO1-SSR-2
	PAG	HBSO2	On request	HBSO2-SSR-2
High temperature Oil temp.: 90°C to 145°C Protection degree: IP54	Mineral PAO POE	n.a.	HBSO1-SSR-1-HT	n.a.
	PAG	n.a.	HBSO2-SSR-1-HT	n.a.

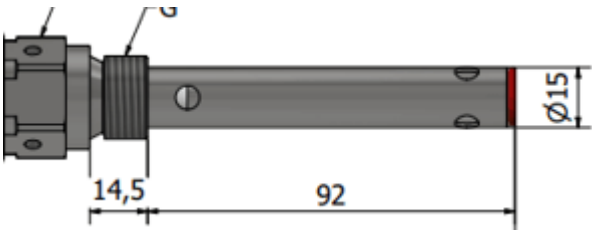
Power supply		24V AC/DC ±10% PNP/NPN output	24V AC/DC ±10% Solid-state relay	90-240V AC Solid-state relay
Voltage		24V AC/DC ±10%	24V AC/DC ±10%	90-240V AC
Max. energy consumption		200 mA	600 mA	40W
Plug connection		ISO 4400	M12, 5pin A code	M12, 4 pin B code
Output				
Digital output		PNP/NPN	Solid-state relay 40 V	Solid-state relay 240 V AC
Environmental conditions				
Ambient temperature		-30°C to 50°C (-22°F to 122°F)	-60°C to 50°C (-76°F to 122°F)	-30°C to 50°C (-22°F to 122°F)
Oil temperature		See the table on the first page		
Max. pressure		150 bar (2175 psi)		
Protection degree		See the table on the first page		
Vibrations		IEC 60068-2-6 (4g)		
Mechanical specifications				
Thread connections for low temperature versions		3/4" NPT and BSPP		
Thread connections for std/high temperature versions		1/2" NPT and BSPP, 3/4" NPT and BSPP & 1 1/8" UNF		
Material - mechanical part		AISI 304/PA/PTFE		
Approvals				
EMC test		EN 61000-2		
Indication				
LED indications when detecting oil		4 x red	3 x green 1 x green flashing	3 x green 1 x green flashing
LED indications when NOT detecting oil		4 x green flashing	1 x green flashing	1 x green flashing
Configurations				
Configuration		Preset	HB Tool	Preset
Scope of supply				
Package includes		Mechanical and electrical part ISO4400 screw connector	Mechanical and electrical part 5 m cable with M12 plug A code	Mechanical and electrical part 5 m cable with M12 plug B code

Dimensional drawing for low temperature

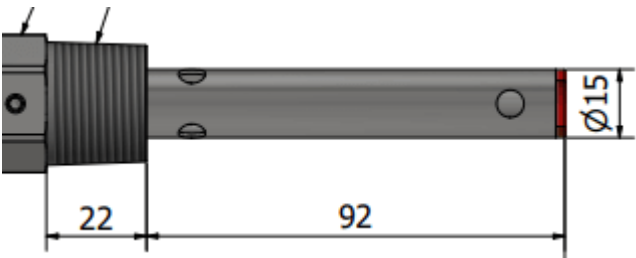


Dimensional drawing for standard and high temperature

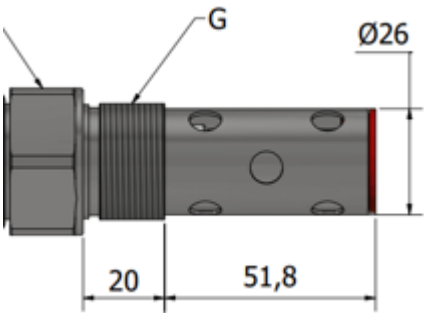
Thread type: 1/2" BSPP & NPT



Thread type: 3/4" BSPP & NPT

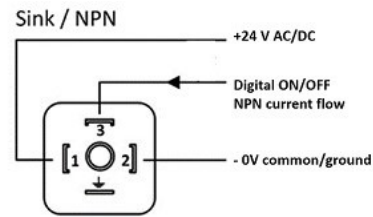
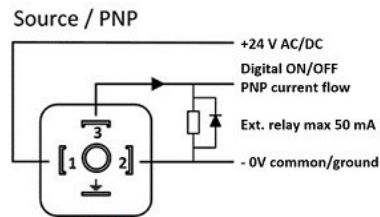


Thread type: 1 1/8" UNEF

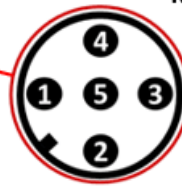


Connection diagrams

24V AC/DC
PNP/NPN output



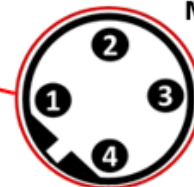
24V AC/DC
Solid-state output



M12 (IEC 61076-2-101 5P A-code)

- 1: +24 VDC or 24VAC
- 2: - common or 24VAC
- 3: Output potential free
- 4: Output potential free
- 5: Communication

90-240V AC
Solid-state output



M12 (IEC 61076-2-101 4P B-code)

- 1: 90-240 V AC
- 2: 90-240 V AC
- 3: Output potential free
- 4: Output potential free

For any inquiries or further information, please don't hesitate to contact us at info@hbproducts.dk.

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